

**Before the  
Federal Communications Commission  
Washington, D.C. 20554**

In the Matter of	)	
	)	
2006 Quadrennial Regulatory Review –	)	MB Docket No. 06-121
Review of the Commission’s Broadcast	)	
Ownership Rules and Other Rules Adopted	)	
Pursuant to Section 202 of the	)	
Telecommunications Act of 1996	)	
	)	MB Docket No. 02-277
2002 Biennial Regulatory Review – Review	)	
of the Commission’s Broadcast Ownership	)	
Rules and Other Rules Adopted Pursuant	)	
to Section 202 of the Telecommunications	)	
Act of 1996	)	MM Docket No. 01-235
	)	
Cross-Ownership of Broadcast Stations and	)	
Newspapers	)	MM Docket No. 01-317
	)	
Rules and Policies Concerning Multiple	)	
Ownership of Radio Broadcast Stations in	)	
Local Markets	)	MM Docket No. 00-244
Definition of Radio Markets		

To the Commission:

**Formal Comments of Nickolaus E. Leggett**

I am one of the original petitioners for the establishment of the Low Power FM (LPFM) radio broadcasting service (RM-9208 July 7, 1997 subsequently included in MM Docket 99-25). I am also a certified electronics technician (ISCET and NARTE) and an Extra Class amateur radio operator (call sign N3NL). I am an inventor holding three U.S. Patents. My latest patent is a wireless bus for digital devices and computers (U.S. Patent # 6,771,935). I have a Master of Arts degree in Political Science from the Johns Hopkins University. I am also one of the petitioners in the recent docket to

establish a low power radio service on the AM broadcast band (RM-11287).

### **Media Ownership and Democracy**

Media ownership has a strong impact on the basic functioning of American democracy. Democracy depends on a robust marketplace of ideas where numerous diverse individuals and organizations develop and present ideas. Political science analysts generally agree that democracy is most effective when numerous diverse media outlets are available. This principle has been recently cited in the observation that hundreds of new newspapers have been established in Iraq since the fall of the old regime.

American broadcasting can be an effective marketplace for numerous ideas and outlooks or it can be a monopoly structure where a few giant media corporations dominate almost the entire broadcasting spectrum. If only a few giant organizations dominate broadcasting, many other ideas, options, and products will be blocked from being broadcast.

We all know that each broadcasting organization has its own biases and preferences. For example, Fox has a rather conservative bias, while National Public Radio has a somewhat liberal and internationalist bias. These on-the-air orientations are perfectly valid expressions of their corporate cultures. The only problem is that if there are only a few corporations broadcasting to the American people, then only a few corporate views are presented to the public.

### **Is Diversity Practical?**

It would be preferable to have hundreds of broadcasting stations in each community offering different program content to the public. This theoretical broadcasting system would be similar to the diversity of publishing in the paper copy world where numerous magazines, journals, newsletters, bulletins, books, and advertising circulars are available. The technology of paper publishing has moved to a situation where any individual or organization with a modern personal computer (PC) can publish high-quality professional documents.

In addition, the rise of the Internet technology allows numerous websites, blogs, and podcasters to present their creative products in a vast public forum.

In contrast, conventional broadcasting offers only a few channels of program content and this limited range of content is dominated and owned by only a few media corporations. This is clearly an inefficient use of the radio spectrum.

### **Methods for Increasing Broadcast Diversity**

The media ownership rules could be changed to allow only one broadcast channel (radio or TV) for each broadcasting corporation in each metropolitan area. In addition, any broadcasting media organization having more than one channel in a city should be required to rent the excess channels to other media organizations at regulated rates. Thus the larger organizations could still own excess channels while the interests of diversity

were still being served.

Alternatively, new technology can be employed to use a portion of the newly available millimeter waves for local broadcasting. This technology would allow numerous local broadcasting channels to be set up in every community in the United States. Each broadcasting station could use a “lighthouse protocol” where a rotating narrow beam is used to distribute digital program content to the memories of consumers’ receivers. Each receiver would play back the program content to its user. Refer to Appendix A. The electromagnetic spectrum in the millimeter wave range is so gigantic in capacity that it can accommodate thousands of broadcast stations in a metropolitan area. With this technology, the current scarcity of broadcast channels is replaced by a plentiful supply of channels where every organization and individual who wants a channel can have one.

### **Spectrum Auctions versus Diversity**

Spectrum auctions should not be used. Spectrum auctions strongly favor the richest and largest media communications organizations while blocking all other Americans from owning communications facilities.

It is hard to defend this situation from a political science standpoint. How can the “land of the free” set up a broadcasting system where only the wealthiest entities can own broadcast facilities and all other Americans are shut out? This is like allowing only millionaires to own cars or houses. This intense class bias is an affront to basic American values and legitimacy. If it

persists it will certainly damage our Nation's legitimacy. It is just wrong to prevent people from setting up modest local broadcasting stations when the technology is emerging that allows them to do so.

### **Recommended Actions**

The Commission should seriously consider making the media ownership rules stricter than they currently are. Each media corporation (large or small) should only be allowed one channel (radio or television) in any metropolitan area.

In addition, provision must be made so that individuals and small neighborhood organizations can set up local broadcasting stations in their neighborhoods. These local broadcasting stations would also be subject to the one channel per owner rule.

**Respectfully submitted,**

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**Appendix A – Using the Lighthouse Protocol for Local Broadcasting**

## **Physical Aspects of Millimeter Wave Broadcasting**

A millimeter wave installation is typically engaged in point-to-point communication using a narrow beam formed by very high gain antennas. This communication is often referred to as "pencil beam" communication.

Clearly, a fixed pencil beam is the opposite of the broad coverage desired for broadcasting service.

However, a pencil beam can be converted into an omni-directional broadcasting system by using a rotating beam. The high-gain transmitting antenna is mounted so that it can be continuously rotated in a similar manner to a plan position indicator (PPI) radar antenna. The transmitting millimeter wave beam would "paint" the surrounding geographic area like an electronic lighthouse.

## **Lighthouse Protocol for Broadcasting**

The neighborhood broadcasting station would transmit packets of digital program material to the broadcast receivers. Each receiver would store the packets and play the program material to the listener.

The station would use a protocol where the same set of packets would be repeated for each beam width around the points of the compass. For example, if the transmitter has a 10-degree beam width, it would transmit 36 repetitions of the packet set. Each repetition would be at a different compass

direction to cover a full 360 degrees.

The radio receivers would put the packets together and play them out to the listeners. This would result in the program material being delayed somewhat from real time, but this would not be a major problem for most neighborhood broadcasting applications.

### **The Benefit of Limited Range**

Another interesting facet of the millimeter waves is that there is significant atmospheric absorption of the signals. This is a major problem for many potential users, but it is actually useful for neighborhood broadcasting. This absorption would prevent a neighborhood broadcaster operating in Reston, Virginia from interfering with a nearby neighborhood broadcaster in another town. Each broadcaster would be limited to a naturally enforced coverage area.